

REMARKS

Claims 1-18 are pending in the present application. In the Office Action, claims 1-3 and 12-14 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Durec (U.S. Patent No. 6,144,846) in view of Razavi, et al (U.S. Patent No. 6,748,204). Claims 4-11 and 15-18 were rejected as allegedly being obvious over Bojer, et al (U.S. Patent No. 6,029,059) in view of Ravazi and Durec. The Examiner's rejections are respectfully traversed.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. That is, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. Third, there must be a reasonable expectation of success. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. A recent Federal Circuit case emphasizes that, in an obviousness situation, the prior art must disclose each and every element of the

claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35.

Durec describes a frequency translation circuit 10 that translates an incoming reference signal to a lower frequency using a compound mixer circuit 42 that includes at least two mixers 14A-X. See Durec, Figures 1 and 4 and related discussion. The mixers 14A-X described in Durec each comprise four interconnected (stacked) transistors 66, 68, 70, 72. However, as admitted by the Examiner, Durec fails to teach or suggest a multiplier circuit having a first and a second mixer, the first mixer comprising a first number of transistors and the second mixer comprising a second number of transistors, the first number being different than the second number, as set forth in claims 1 and 4. The Examiner therefore relies upon Razavi to teach a mixer having two transistors.

The Examiner's conclusory statement that it would have been obvious to substitute one of the mixers described in Razavi for only one of the mixers described in Durec notwithstanding, Applicants respectfully submit that the cited references provide no suggestion or motivation to combine and modify the references in the manner suggested by the Examiner. To the contrary, Durec teaches away from a multiplier circuit having two mixers with an unequal number of transistors. For example, the four transistors in each of the mixers described in Durec are interconnected (stacked) in a manner that requires the presence of all four transistors in each mixer. Furthermore, the mixers described in Durec appear to be interconnected with each other in a manner that requires that each mixer have the same number of transistors as the other mixers. Thus, Durec teaches away from combining the two-transistor mixer described by Razavi

with the four-transistor mixers described by Durec to arrive at Applicants' claimed invention. It is by now well established that teaching away by the prior art constitutes *prima facie* evidence that the claimed invention is not obvious.

With particular regard to independent claim 4, the Examiner relies on Bojer to describe a pair of multiplier circuits having four transistors each. The multiplier circuits receive four-phase signals from a generator. Bojer, however, fails to remedy the fundamental deficiency in the Durec and Razavi references, *i.e.* the failure to teach or suggest a first mixer comprising a first number of transistors and the second mixer comprising a second number of transistors, the first number being different than the second number, as set forth in claim 4. Accordingly, the cited references also fail to teach or suggest a second multiplier circuit having a third and a fourth mixer, the third mixer comprising a third number of transistors and the fourth mixer comprising a fourth number of transistors, the third number being different than the fourth number.

Bojer also teaches away from a multiplier circuit having two mixers with an unequal number of transistors by teaching that the quadrature mixer 40 is a dual balanced quadrature mixer. See Bojer col. 3, ll. 64-65 and Figure 3. For example, the two balanced mixers (Gilbert cells 60, 62) each have four transistors T1-T8.

For at least the aforementioned reasons, Applicants respectfully submit that the present invention is not obvious over the cited references, either alone or in combination, and request that the Examiner's rejections of claims 1-18 under 35 U.S.C. 103(a) be withdrawn.

For the aforementioned reasons, it is respectfully submitted that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

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Respectfully submitted,



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